

Work Order ID 134128

Thursday, July 02, 2015 1:57:03 PM

U/R***134128***

Page 1

Item ID: D412-664-403

Accept

N900040100Setup Start ***NS1***Revision ID: ~~U/R (URF 15-561)~~Stop ***NS2***

Item Name: 412 Stainless Steel Aft Crosstubes - High

Start Date: 7/2/2015 Start Qty: 1.00

1

Cust Item ID:

Required Date: 7/2/2015 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals:

Process Plan: MCSDate: JUL 02 2015 Tooling:

Date:

Run Start ***NR1***

QC:

Date:

SPC (Y/N):

Date:

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr

Revision Nbr

D412-664-443

A U/R

OK

CP 15/17/16

100

Document Control

0.00

DAS

6

9-89

100

DOCUMENT CONTROL

0.00

Memo

DC

Doc.Control -USB or Paperwork

Photocopy bluefile & type labels per PPPD412-664-403 CHG001

DAS

02

9-89

SEP 23 2015

110

BENDING MACHINE - CROSSTUBES

0.00

110

CNC Bend 2

Memo

0.00

CNC Alpha 160 Bender

Bend tube as per Dwg D412-664-443 using CNC bender program _____ and Folio FT _____

****USE (4) DT9824 SHIM BLOC TO CHECK STRAIGHTNESS****

BL 15/09/17

127

QC15- Crosstube Dimensional Check

0.00

127

QC

Memo

0.00

Quality Control

MARK CUT LINES

1 0

DAS

47

9-89

15-09-17

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

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134128

Page 2

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Revision ID: U/R (URF 15-561) Stop ***NS2***
Item Name: 412 Stainless Steel Aft Crosstubes - High
Start Date: 7/2/2015 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 7/2/2015 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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128

128

Crosstubes

Crosstubes

Memo

CUT TUBE AT HEIGHT ON FAI SHEET

VERF HEIGHT 24.375" BY QC 15 LEVEL INSPECTOR DAS
VERF TWIST 0.039" BY QC15 LEVEL INSPECTOR 47
9-89

130

130

Crosstubes

Crosstubes

Crosstubes

Memo

1- Drill Tube as per Dwg D412-664-443 Using DT _____ Drill Jigs,
Set-up drill table as per QSI 010

2-Deburr

3- Engrave Part # and Batch # as per Dwg D412-664-443

4-Remove all marks from tube within limits of D412-664-43 DWG 15-09-17

BL 15/09/17
BL 15/09/17

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

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140	QC	0.00							
Quality Control	<i>QC5</i> <i>DAS 38</i> <i>9-89</i> <i>Memo</i>								
174	Outsource process - NDT per QSI038 4.1	0.00							
174	Outsource2	0.00							
Outsource process - NDT	<i>Memo</i> ISSUE P/O TO ACCUREN: <u>29827</u>								
176	Receive & Inspect for Damage & Mat'l Certs	0.00							
176	Packaging	0.00							
Packaging	<i>Memo</i>								

P.T.O.
DAS
49
9-89

1509-17

CZ SEP 18 2015 *1*

12 SP 1509-21

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☒

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width:100%; border: none;"> <tr> <td style="border: none;">Skid-tube ☐</td> <td style="border: none;">Cross tube ☐</td> <td style="border: none;">Water Jet ☐</td> <td style="border: none;">Engineering ☐</td> </tr> <tr> <td style="border: none;">Machining ☐</td> <td style="border: none;">Small Fab ☐</td> <td style="border: none;">Prod. Eng. Coord. ☐</td> <td style="border: none;">Quality ☐</td> </tr> <tr> <td style="border: none;">Thermoforming ☐</td> <td style="border: none;">Finishing ☐</td> <td style="border: none;">Rec/Store/Packaging ☐</td> <td style="border: none;">Other ☐</td> </tr> <tr> <td style="border: none;">Large Fab ☐</td> <td style="border: none;">Composite ☐</td> <td style="border: none;">Supplier ☐</td> <td></td> </tr> </table>						Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐																																																	
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OTHER: step 140 Qc6 change to Qc5 38																																																																									

Work Order ID 134128

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134128

Page 4

Item ID: D412-664-403 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: U/R (URF 15-561) Stop ***NS2***
Item Name: 412 Stainless Steel Aft Crosstubes - High
Start Date: 7/2/2015 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 7/2/2015 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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178	QC5- Inspect part completeness to step on W/O	0.00							
-----	---	------	--	--	--	--	--	--	--

178

QC

Memo

0.00

Quality Control

DAS

38

9-89

SEP 21 2015

180

180

SprayPaint

Spray Painting

SprayPaint

Memo

0.00

1-Prime inside & outside crosstube as per QSI 005 4.2

BATCH: 132384

2- MASK UNDERSIDE OF CROSSTUBE AS SHOWN ON DWG BEFORE PAINTING

3 -Paint Outside of Tube as per Dart QSI 005 4.2

BATCH: 132896

4- After painting remove masking and apply matte clear coat per QSI005 4.2

CLEAR BATCH: 131483

DAS

41

9-89

15-9-21

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: <u>134128</u> Part No. <u>D412-664-403</u> NCR No. _____		DISPOSITION Rework ☒ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width:100%; border: none;"> <tr> <td style="border: none;">Skid-tube ☐</td> <td style="border: none;">Cross tube ☐</td> <td style="border: none;">Water Jet ☐</td> <td style="border: none;">Engineering ☐</td> </tr> <tr> <td style="border: none;">Machining ☐</td> <td style="border: none;">Small Fab ☐</td> <td style="border: none;">Prod. Eng. Coord. ☐</td> <td style="border: none;">Quality ☐</td> </tr> <tr> <td style="border: none;">Thermoforming ☐</td> <td style="border: none;">Finishing ☐</td> <td style="border: none;">Rec/Store/Packaging ☐</td> <td style="border: none;">Other ☐</td> </tr> <tr> <td style="border: none;">Large Fab ☐</td> <td style="border: none;">Composite ☐</td> <td style="border: none;">Supplier ☐</td> <td></td> </tr> </table>						Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐	
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Date : <u>15/7/6</u>		Step #: <u>180</u>		QTY Effective : <u>1</u>		MRB (QSI042) Approval DAs <u>12</u> <u>9-89</u> <u>15/7/6</u>																			
Description Work Order Deviation				Disposition																					
Use Axalta cleaner & Metalok per manufacturers by instructions. Based on internal tests, axalta greatly increases paint adhesion				Axalta 1320SS B/N: 132520 Axalta 230S B/N: 132474																					
				Completed By DAs <u>41</u> <u>15-9-18</u> <u>9-89</u>																					
				Lead hand / Supervisor Approval Verification																					
				QC / QA Coordinator Approval																					
Root Cause		FAULT CATEGORY																							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐																				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐																				
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Past Expiry Date ☐	Manufacturing Process ☐																								
Misidentified ☐	Past Due ☐	OTHER : _____																							

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134128

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Accept

N900040100

Setup Start *NS1*

Stop *NS2*

Item Name: 412 Stainless Steel Aft Crosstubes - High

Start Date: 7/2/2015 **Start Qty:** 1.00 ***1***

Cust Item ID:

Required Date: 7/2/2015 **Req'd Qty:** 1.00 ***1***

Customer:

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop *NR2*

Sequence ID/
Work Center ID

Operation Description

Set Up/ Run Hours

Tool ID

Tool #	Plan
--------	------

**Plan
Code**

**Accept
Qty**

Reject
Qty

Reject Number

**Insp.
Stamp**

190

QC14- Inspect Spray Paint

0.00

190

QC

Memo

0.00

Quality Control

1 9B

15-09-23

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mis-labeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
OTHER : _____					

Work Order ID 134128***134128***

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Item ID: D412-664-403 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: U/R (URF 15-561) Stop ***NS2***
Item Name: 412 Stainless Steel Aft Crosstubes - High
Start Date: 7/2/2015 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 7/2/2015 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
200	Crosstubes	0.00							DAS
200									41
Crosstubes									9-80
Crosstubes	Memo	0.00							15-9-22
	1- Install center support using scoth-weld DP460 per QSI 015, as per DWG. note 12. Install supports clamps using as per Dwg D412-644-443. Install clamp with rubber cushion as per DWG. note 13. ***ENSURE CLAMPS ARE ON TOP OF CROSSTUBE SUPPORT*** Torque clamps on support to 80-100 IN-LBS AS PER DWG.								
	A/R scoth-weld DP460 BATCH #: <u>132895</u> EXP DATE: <u>8/16</u>								
	2- **IF NOT ALREADY PRESENT ON CHAFFING SHEILD.** Apply a thin coat of proseal 890 per QSI 015 on inside concave surface of chafing shield and let cure per manufacturer's instructions. Install prosealed chafing shield onto crosstube by applying a thin coat of proseal 890 onto crosstube. Be sure to eliminate any air gaps. Install and torque clamps on chafing shield to 40-50 IN-LBS AS PER DWG.								
	A/R Proseal 890 Batch: <u>132655</u> EXP DATE: <u>3/16</u>								
	AFTER FINISH CURE TIME 24H START CURE TIME: <u>15-9-22</u> FINISH CURE TIME: <u>15-9-23</u>								
	PRIOR TO PACKAGING RE-CHECK TORQUE ON CLAMPS AFTER CURED FOR 24H.								

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :			MRB (QSI042) Approval
Description Work Order Deviation		Disposition			Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
		OTHER : ☐			

Work Order ID 134128***134128***

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Item ID: D412-664-403 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: U/R (URF 15-561) Stop ***NS2***
Item Name: 412 Stainless Steel Aft Crosstubes - High
Start Date: 7/2/2015 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 7/2/2015 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
210	QC5- Inspect part completeness to step on W/O	0.00							
210									
QC	Memo	0.00							
Quality Control	PRIOR TO PACKAGING RE-CHECK TORQUE ON CLAMPS AFTER CURED FOR 24H.								15-09-23
220	Pick Kit	0.00							
220									
Packaging	Memo	0.00							
Packaging									
230	QC4- 100% Inspect kits for completeness	0.00							
230									
QC	Memo	0.00							
Quality Control									

SEP 23 2015

Work Order ID 134128

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Item ID: D412-664-403 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: U/R (URF 15-561) Stop ***NS2***
 Item Name: 412 Stainless Steel Aft Crosstubes - High
 Start Date: 7/2/2015 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 7/2/2015 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
240	Packaging	0.00							
240									DAS
Packaging	Memo	0.00							02
Packaging	Identify and pack for shipping as per PPPD412-664-443								9-89
	Location: _____								SEP 24 2015
	PPP Rev: _____ <i>fishore</i>								
250	QC21- Final Inspection - Work Order Release	0.00							
250									
QC	Memo	0.00							
Quality Control									

15/9/24 *AF*

SA 20150924

Picklist Print

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Page 1

Work Order ID: 134128

134128

Parent Item: D412-664-403

D412-664-403

Parent Item Name: 412 Stainless Steel Aft Crosstubes - High

Start Date: 7/2/2015

Required Date: 7/2/2015

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP REV:A 13.10.25 NEW ISSUE DD VERF:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D412-664-443TRN		Manufactured	No			110	Each	0.0000	1	①	1	13L	15/09/16
D412-664-443TRN					132986				**				
Crosstube Turning Detail													
D3595-063-530		Manufactured	No			200	Each	128.0000	2	2		DAS 41 9-89	15-9-22
D3595-063-530									**				
Rubber Cushion 0.63" wide x 5.30" Long													

Location	Loc Qty	Loc Code
FG	1	
82656	1	
LG051	127	
115704	52	
132515	75	

D4909-1		Manufactured	No			200	Each	8.0000	1	1		DAS 41 9-89	15-9-22
D4909-1									**				
Support													

Location	Loc Qty	Loc Code
LG053	8	
121062	2	
130094	6	

D4910-1		Manufactured	No			200	Each	8.0000	2	2		DAS 41 9-89	15-9-22
D4910-1									**				
Chaffing Shield													

Location	Loc Qty	Loc Code
LG053	8	
130093	8	

Picklist Print

Thursday, July 02, 2015 1:57:07 PM

Page 2

Work Order ID: 134128

134128

Parent Item: D412-664-403

D412-664-403

Parent Item Name: 412 Stainless Steel Aft Crosstubes - High

Start Date: 7/2/2015

Required Date: 7/2/2015

Start Qty: 1.00

Required Qty: 1.00

MS21920-26

Purchased

No

200

Each

40.0000

4

4

DAS

MS21920-26

41

9-89

15-9-22

Clamp

Location

Loc Qty

Loc Code

LG050

40

109206

10

M132045

30

4

MS21920-28

Purchased

No

200

Each

183.0000

2

2

DAS

MS21920-28

41

9-89

15-9-22

Clamp

Location

Loc Qty

Loc Code

FG

1

105884

1

LG050

78

131651

26

M130400

50

M130665

2

LG051

104

M132169

38

M132381

28

M132522

38

2

AN6-40A

Purchased

No

220

Each

146.0000

4

4

AN6-40A

DAS

27

9-89

SEP 23 2015

3/8-24 BOLT X 3"LONG

Location

Loc Qty

Loc Code

ST286A

144

M131618

44

M131803

100

ST333

2

M130466

2

4

Thursday, July 02, 2015 1:57:07 PM

Shop Packet Print

Page 2

Picklist Print

Thursday, July 02, 2015 1:57:07 PM

Page 3

Work Order ID: 134128

134128

Parent Item: D412-664-403

D412-664-403

Parent Item Name: 412 Stainless Steel Aft Crosstubes - High

Start Date: 7/2/2015

Required Date: 7/2/2015

Start Qty: 1.00

Required Qty: 1.00

AN6-41A Purchased No

220 Each 85.0000 2 2

AN6-41A

Bolt

**

BAS
27
9-89

68
8
SV3

Location Loc Qty Loc Code

ST286A 63

M129913 3

M131957 60

ST333 22

M129934 2

M131618 20

AN960JD616 NAS1149D0663J Purchased No

220 Each 0.0000 18 18

AN960JD616

Washer

m132256 **

BAS
27
9-89

68
8
SV3

MS21042L6 Purchased No

220 Each 417.0000 6 6

MS21042L6

Nut

**

BAS
27
9-89

68
8
SV3

Location Loc Qty Loc Code

ST260a 199

m132262 199

ST273A 200

m131624 200

ST305 1

m129909 1

t260a 17

m131317 17

SEP 23 2015

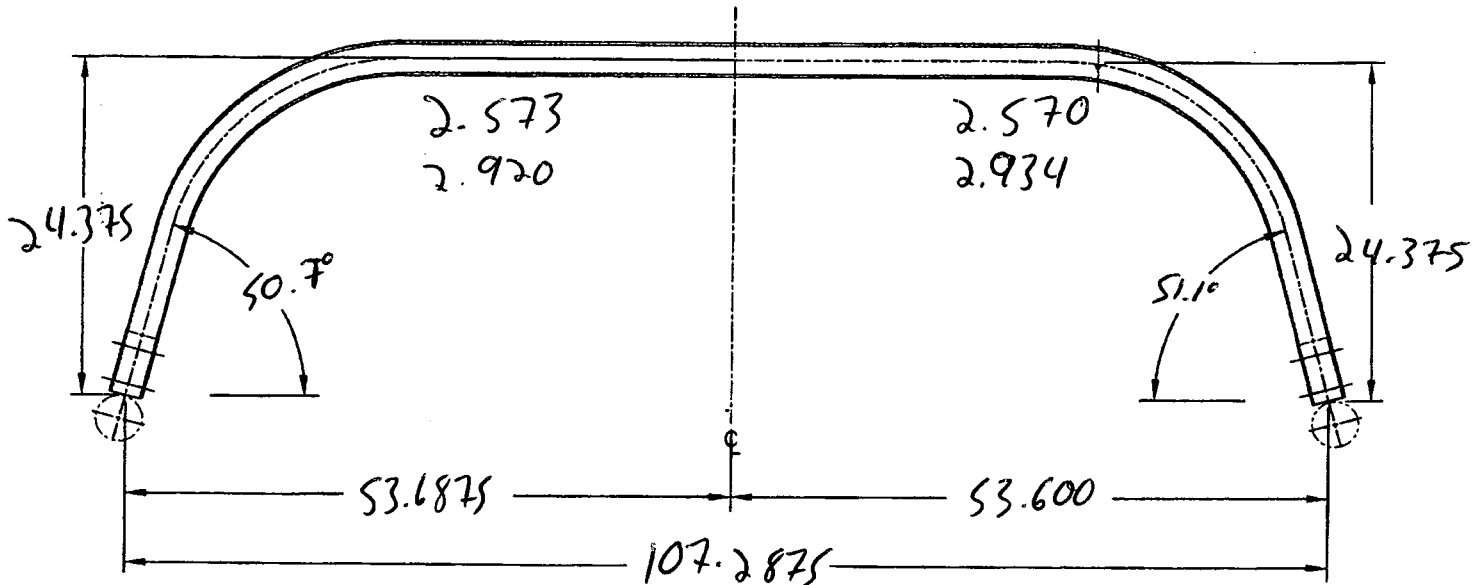
Thursday, July 02, 2015 1:57:07 PM

Shop Packet Print

Page 3

DART AEROSPACE LTD		Work Order: 134128
Description: Crosstube High Aft (412)		Part Number: D412-664-403
Inspection Dwg: D412-664-443	Rev: A	Page 1 of 1

Required Dimension	Min	Max
Height	24.12	24.62
1/2 Span	53.56	53.82
Angle	49°	52°
Total Span	107.12	107.64
Bending Passes	8	--
Crushing	--	7%



	Side A	Side B
Bending Passes	15	14
Crushing	6.3%	6.6%
Comments		

DAS

47

QC15 Inspection	9-89
Date	15-09-17

Rev	Date	Change	Revised by	Approved
A	14.07.08	New Issue	KJ	UP

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 13412-8 M

UNDER REVIEW

- OK
P
1614
UNDER REVIEW
JUL 7/80
URF A-691

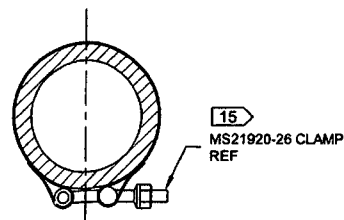
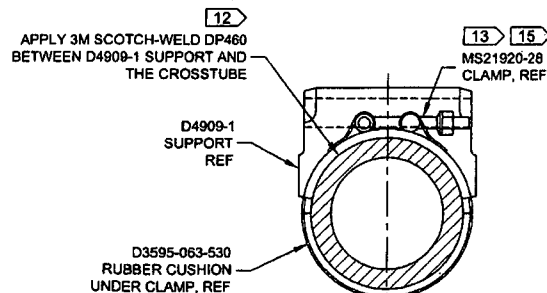
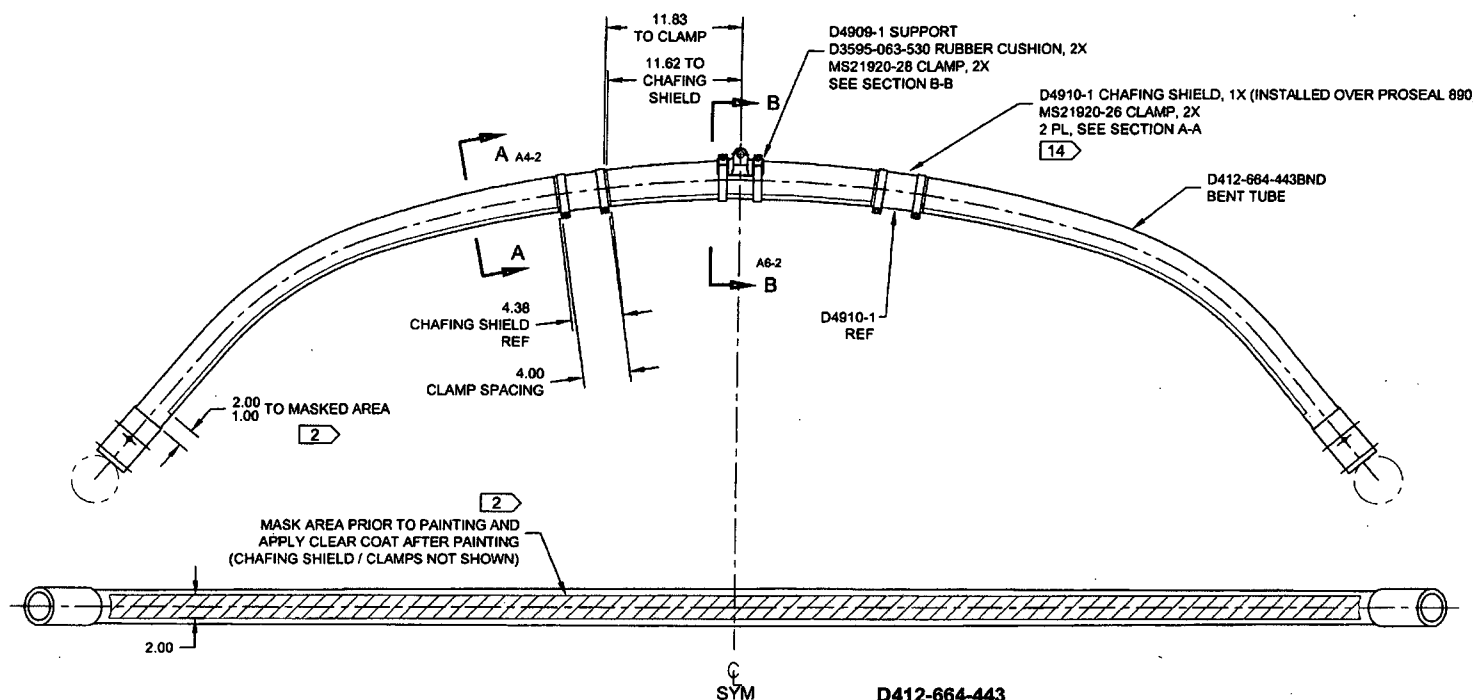
RELEASE
2014-05-26

- ## ASSEMBLY

- | | | | |
|------------|-----------|--|-------------|
| A | NEW ISSUE | CP | 14.04.01 |
| REV. | | DESCRIPTION | BY DATE |
| DRAWN | <i>q</i> | DART AEROSPACE LTD
HAWKESBURY, ONTARIO, CANADA

DRAWING NO. D12-664-443

TITLE CROSSTUBE ASSY (412 HI AFT) | REV. 1 OF 1 |
| CHECKED | <i>q</i> | | SCAL |
| MFG. APPR. | <i>q</i> | | NT |
| APPROVED | <i>q</i> | | |
| DE APPR. | <i>q</i> | | |
| DATE | 14.04.01 | COPYRIGHT © 2011 BY DART AEROSPACE LTD
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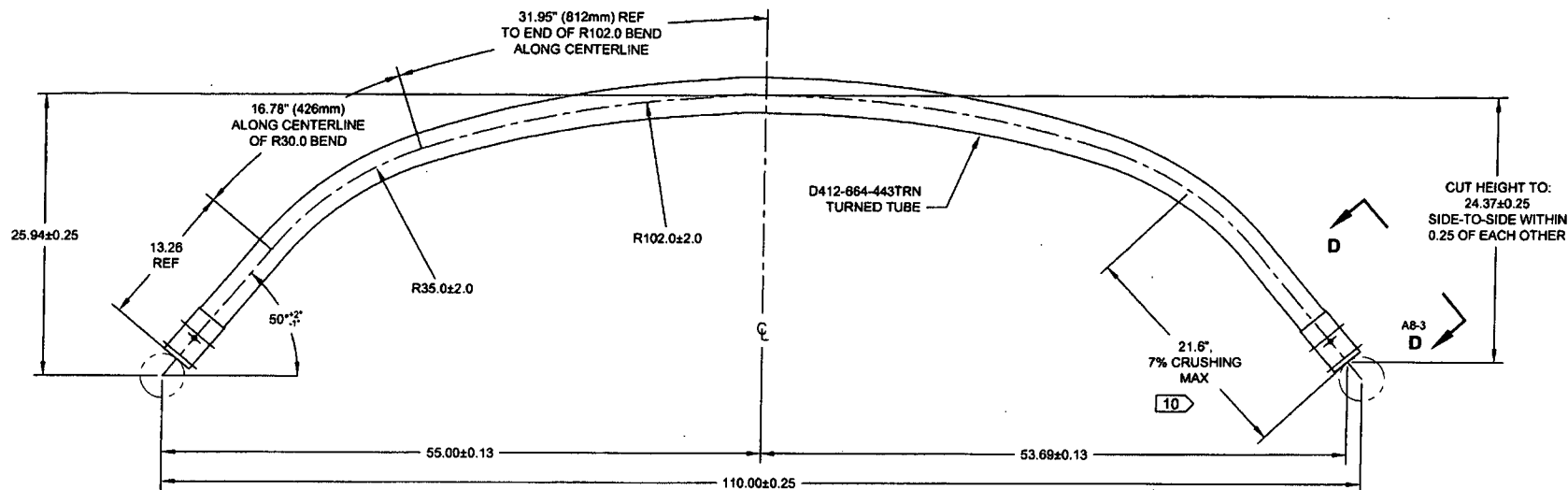


UNDER REVIEW
15/4/23

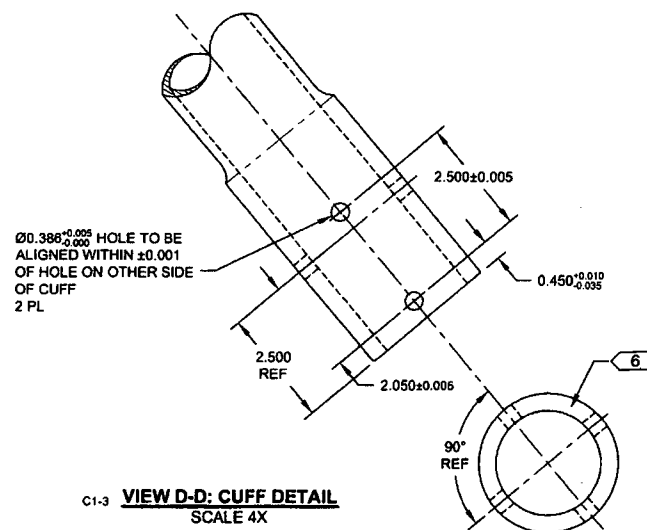
UNDER REVIEW
15/4/23

RELEASED
2014-05-26
WMP

DESIGN	90	DART AEROSPACE LTD	
DRAWN	90	HAWKESBURY, ONTARIO, CANADA	
CHECKED	DW	DRAWING NO.	REV. A
MFG. APPR.		D412-664-443	SHEET 2 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE ASSY (412 HI AFT)	NTS
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D412-664-443BND
BENDING DETAIL



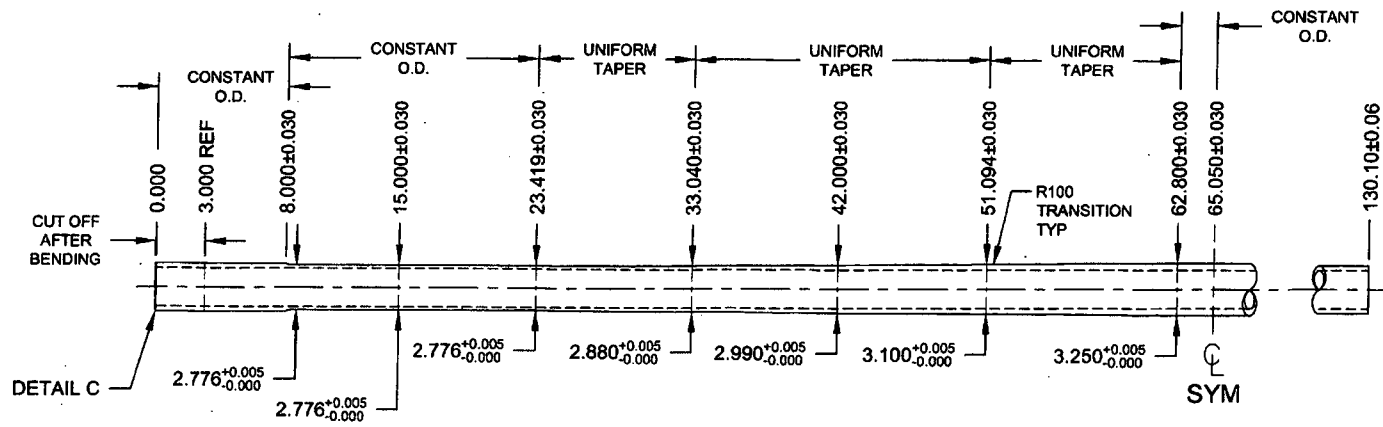
C1-3 **VIEW D-D: CUFF DETAIL**
SCALE 4X

OK
P. n/44
UNDER REVIEW
14/7/20

UNDER REVIEW
P. 15/4/20

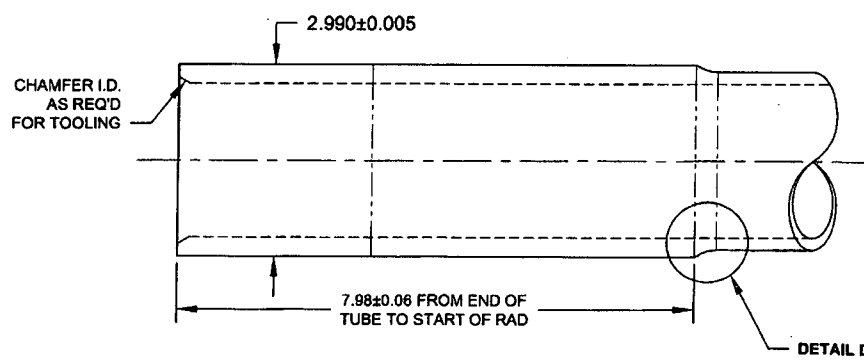
RELEASED
2014-05-26

DESIGN	P	DART AEROSPACE LTD	
DRAWN	P	HAWKESBURY, ONTARIO, CANADA	
CHECKED	DW	DRAWING NO.	REV. A
MFG. APPR.		D412-664-443	SHEET 3 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE ASSY (412 HI AFT)	NTS
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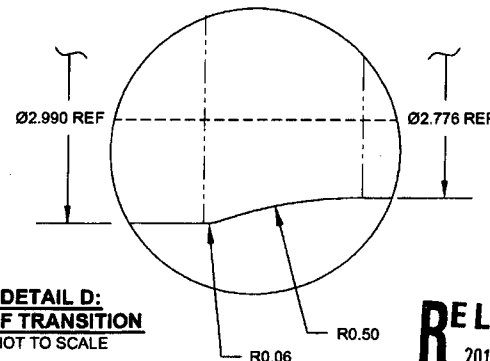


D412-664-443TRN
TURNING DETAIL

UNDER REVIEW
15/4/28



DETAIL C:
CUFF TRANSITION
SCALE 4X



DETAIL D:
CUFF TRANSITION
NOT TO SCALE

RELEASED
2014-05-26

DESIGN	QP	DART AEROSPACE LTD	
DRAWN	QP	HAWKESBURY, ONTARIO, CANADA	
CHECKED	DP	DRAWING NO.	REV. A
MFG. APPR.		D412-664-443	SHEET 4 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE ASSEMBLY (412 HI AFT)	NTS
DATE	14.04.01	COPYRIGHT © 2013 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR REPRODUCED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

D412-664-403 Stainless Steel Hardened Crosstube

setup

3.25" rollers

Bend lines are @ 32", 35" from centerline of tube

1.75" shims are used in the buggy for side bends

Middle Bend

Middle bend goes from 35" line with crosstube being on the large table of the machine.

Approach for middle bend is 2870 on both rollers. Run programs middle auto, middle 6 check.

Side Bends

Run programs side 1-10 down the taper from 32" tangent line. Approach is 2900 on Y roller and 3385 on W roller. Programs 1-5 go back to the tangent line ready for next bend. Program 6-10 release at the end. Approaches on programs 6-10 are on the first line of programs... Programs 11-15 run down taper for 9" then come back up to finish tube slowly, be careful with these programs...

Enjoy

Notes:

13/12/12 ran 1 tube, program middle 6 was not enough, prog middle 7 overbent slightly. will create middle 6b to be a halfway point. after program 7 we ran the tube as per folio. one side finished nicely at program 10, the opposite side finished nicely after running program 1 2 times, then 13 to finish. this left the tube closer to max tolerance on the span, 53.730/53.800.

15/06/03 middle auto has been made but, due to the long program, only contains programs 1-5. program 6 must be run separately prior to checking tube on wall.

1	MA	1
2		2
3	6	3
4	7	4
5		5
6	(7)	6
7		7
8		8
9		9
10		16 place on numbers first.
11		11
12	(15)	12
13		13
14		14
15		(14)



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID PO29829

Purchase Order Date 9/18/2015

PO Print Date 9/18/2015

Page Number 1 of 2

Order From :
SKYSERVICE
6120 MIDFIELD ROAD
MISSISSAUGA, ONTARIO L5P 1B1
CANADA

VC-SKY001

Ship To : DART AEROSPACE LTD
1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

Contact Name
Vendor Phone 905-678-5636

Ship To Contact
Ship To Phone

Ship Via: Delivered
Ship Acct:

Buyer Chantal Lavoie
Customer POID
Customer Tax # 10127-2607
Terms Net 30
Currency CAD
FOB FCA - (Free Carrier)

Line Nbr	Reference Vendor Part Number Line Comments Delivery Comments	Description/ Mfg ID	Req Date/ Taxable Promise Date	CD	Req Qty/ Unit of Measure	PO Unit Price	Extended Price
1	71401-45	PROCUREMENT QUALITY CLAUSES	9/18/2015		1.00	\$0.00	\$0.00
			No 9/18/2015				
		PROCUREMENT QUALITY CLAUSES					
		A005 RIGHT OF ENTRY					
		A016 PERSONNEL QUALIFICATION					
		A020 NON - DESTRUCTIVE TEST/INSPECTION					
		IDENTIFICATION					
		A041 QUALITY MANAGEMENT SYSTEM					
		A042 DART NOTIFICATION BY SUPPLIER					
		A043 RETENTION OF QUALITY DOCUMENTS					

Line Total:							\$0.00
2	134128	D412-664-403 CROSSTUBE	9/18/2015		1.00	\$305.00	\$305.00
			Yes 9/18/2015				

LIQUID PENETRANT INSPECTION AS PER QSI 038 OR
LPI AS PER ASTM 1417 LEVEL 2

Note:

9/18/2015

8/15-09-21

skyservice Work Order Traveler

Sky Service F.B.O. Inc.

DOT APP 53-89 / EASA 145.7142 / BDA AMO 385

WO #: MWO25803	Customer: Dart Aerospace Ltd.	Dept: NDT YUL	Reference: 29829
Descr:	PN:	S/N:	Qty: 1
Make:	Model:	Reg:	A/C S/N:
TSN:	CSN:	TSO:	
Task: UNSCHEDULED			Sequence: 1

Work Required:

CARRY OUT NDT ON 2 CROSSTUBES AS PER PO29829,

2 STAINLESS STEEL 412 AFT CROSSTUBES , ITEM ID# D412-664-403 , WORK ORDER ID# 134127, 134128

Action Taken:						Date:	Initial/Stamp:
LPI C/O IAW ASTM E-1417M-13 NO CRACK FOUND PEN. ZL-56, MPO13600, UV M-20141, CLEANER SKC-S MPO13923 , DEV. MPO11715						SEP 18 2015	 
Description	Location	P/N	Qty	Batch	S/N Off	S/N On	

SP/5-09-21

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature:	ACA/SCA Stamp	Date:
Name: RAFIK DELIKIAN		SEP 18 2015

Work Order ID 134128

Thursday, July 02, 2015 1:57:03 PM

U/R

134128

Page 1

Item ID: D412-664-403

Revision ID: U/R (URF 15-561)

Item Name: 412 Stainless Steel Aft Crosstubes - High

Start Date: 7/2/2015 Start Qty: 1.00

Required Date: 7/2/2015 Req'd Qty: 1.00

Reference:

Accept

N900040100

Setup Start *NS1*

Stop *NS2*

Cust Item ID:

Customer:

Approvals: Process Plan: MLS

Date: JUL 02 2015

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start *NR1*

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D412-664-443	A U/R								
100	Document Control	0.00							
100	DOCUMENT CONTROL								
DC	Memo	0.00							
Doc.Control -USB or Paperwork	Photocopy bluefile & type labels per PPPD412-664-403		CHG001						
110		0.00							
110	BENDING MACHINE - CROSSTUBES								
CNC Bend 2	Memo	0.00							
CNC Alpha 160 Bender	Bend tube as per Dwg D412-664-443 using CNC bender program _____ and Folio FT _____								
	****USE (4) DT9824 SHIM BLOC TO CHECK STRAIGHTNESS****								
127	QC15- Crosstube Dimensional Check	0.00							
127									
QC	Memo	0.00							
Quality Control	***MARK CUT LINES***								

BL 15/09/17

1 0 DAS 47 9-89

15-09-17

5.2 HIGH GEAR CROSSTUBE, HEAVY-DUTY

ITEM	QTY -403	PART NUMBER	DESCRIPTION
	X	D412-664-403	CROSSTUBE INSTALLATION, HEAVY-DUTY, 412 HIGH AFT
9	1	D412-664-443	CROSSTUBE ASSEMBLY, HEAVY-DUTY, 412 HIGH AFT
70	1	* D4909-1	SUPPORT
71	2	* D4910-1	CHAFING SHIELD
72	2	* D3595-063-530	RUBBER CUSHION
73	4	* MS21920-26	CLAMP
74	2	* MS21920-28	CLAMP
75	4	AN6-40A	BOLT
76	2	AN6-41A	BOLT
77	6	MS21042L6	NUT (OR MS21042-6)
78	18	AN960JD616	WASHER

*REFERENCE ONLY. PARTS ARE INCLUDED IN D412-664-443 ASSEMBLY ABOVE

NOTE: KITS INCLUDE EXTRA HARDWARE FOR COMPATIBILITY WITH BOTH DART AND BELL/AAI SKIDTUBES.